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Status of the Iceland Scallop (*Chalmys islandica*) and Giant Scallop (*Placopecten magellanicus*) fisheries on the western coast of Newfoundland (Fisheries and Oceans, Gulf Region) - 1990 update.

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Abstract

Lanteigne, M. and L.-A. Davidson, 1992. Status of the Iceland Scallop (*Chlamys islandica*) and Giant Scallop (*Placopecten magellanicus*) fisheries on the western coast of Newfoundland, (Fisheries and Oceans, Gulf Region) - 1990 update. Can. Manuscr. Rep. Fish. Aquat. Sci. 2154: vi + 10 p.

The scallop catch and effort data from 1984 to 1990, along the western coast on Newfoundland (Gulf Region), were obtained from the Program Coordination and Economics Branch (PCE Branch) of the Department of Fisheries and Oceans. The present collecting and compiling system for fishery statistics does not differentiate between iceland scallop and giant scallop landings. However, since the iceland scallop are found mainly in the deep and cold waters of the Strait of Belle Isle, landings reported in statistical districts 1, 47, 48, 49 and 50 were considered to be iceland scallops. Scallop landings reported in statistical districts 38, 39, 40, 41, 42, 43, 44, 45 and 46 were considered to be giant scallops. The fishing effort was estimated by sorting the catch and effort data by Canadian Fishing Vessel (CFV) number. Potential fishing effort was estimated from the number of fishing licences issued in 1990.

The iceland scallop landings on the western coast of Newfoundland (in the Strait of Belle Isle) have decreased substantially from 277 t (adductor muscles) in 1985 to 9 t in 1990. This decrease coincides with the decrease in number of active fishing vessels and the catch/vessel. In 1986, 88 vessels landed an average of 2.4t of adductor muscles/vessel compared to 0.9t of adductor muscles/vessel for a total of 11 active vessels in 1990. The giant scallop landings (south of the Strait of Belle Isle) have also decreased from 41 t in 1984 to 4 t in 1990. As with the iceland scallop, the decrease in landings coincides with the overall decrease in number of active fishing vessels.

Résumé

Lanteigne, M. and L.-A. Davidson, 1992. Status of the Iceland Scallop (*Chlamys islandica*) and Giant Scallop (*Placopecten magellanicus*) fisheries on the western coast of Newfoundland, (Fisheries and Oceans, Gulf Region) - 1990 update. Can. Manuscr. Rep. Fish. Aquat. Sci. 2154: vi + 10 p.

Les données de capture et d'effort pour la pêche du pétoncle sur la côte ouest de Terre-Neuve (Région du Golfe) ont été obtenues de la direction de la coordination des programmes et des services économiques pour les années 1984 à 1990. Le présent système de collecte et de compilation des statistiques de pêche ne différencie pas les débarquements de pétoncles d'Islande et de pétoncles géants.

Cependant, puisque le pétoncle se retrouve principalement in les eaux profondes et froides du détroit de Belle Isle, les débarquements rapportés dans les districts statistiques 1, 47, 48, 49 et 50 ont été considérés comme étant du pétoncle d'islande. Les débarquements de pétoncles dans les districts statistiques 38, 39, 40, 41, 42, 43, 44, 45 et 46 ont été considérés comme étant du pétoncle géant. l'effort de pêche a été estimé par un tri des données de capture et d'effort en fonction du numéro de Bateau de Pêche Canadien (BPC). L'effort de pêche potentiel a été estimé à partir du nombre de permis de pêche du pétoncle émis en 1990.

Les débarquements de pétoncles sur la côte ouest de Terre-Neuve (détroit de Belle Isle) ont diminués de façon substantielle de 277 t (muscles adducteurs) en 1985 à 9 t en 1990. Cette diminution coïncide avec une diminution du nombre de bateaux de pêche actifs et de la capture/bateau. En 1986, 88 bateaux ont débarqué en moyenne 2.4t de muscles adducteurs/bateau comparativement à 0.9t de muscles adducteurs/bateau pour un total de 11 bateaux actifs en 1990. Les débarquements de pétoncles géants (au sud du détroit de Belle Isle) ont aussi diminués de 41 t en 1984 à 4 t en 1990. Comme pour le pétoncle d'Islande, la diminution des débarquements coïncide avec une diminution générale du nombre de bateaux de pêche actifs.

Introduction

Since 1982, the Gulf Region of the Department of Fisheries and Oceans has been responsible for management of the scallop fisheries of the western coast of Newfoundland (Figure 1). Two species of scallops are fished on the western coast of Newfoundland, the iceland scallop (*Chlamys islandica*) and the giant scallop (*Placopecten magellanicus*). The iceland scallops are found in deep waters along the coast of Labrador and Newfoundland, and in the Strait of Belle Isle south to Daniel's Harbour. The giant scallops are found south of Daniel's Harbour in shallower waters than the iceland scallops. The distribution of each species is characterized by overlaps which can be reflected in the catches. Unfortunately, the species or the proportions of each species in the catches are not identified in the catch and effort statistics.

The iceland scallop commercial fishery in the Strait of Belle Isle began in 1969. Up until 1981 the fishing efforts were concentrated in the southern part of the Strait. In 1982, fishing activities expanded to the middle of the Strait and by 1985 the entire Strait was exploited (Lanteigne and Davidson, 1988).

Giant scallop landings were low during the 1930's and early 1940's (up to 18 t). This species was fished mainly from Port au Port Bay and Bay of Isles (Squires, 1962). After 1946, landings increased quickly reaching 188 t in 1954 and 167 t in 1955. It was estimated that 53% in 1954 and 92% in 1955 of the scallops landed were fished in Port au Port Bay by Nova Scotian vessels. In 1956, landings dropped to 7 t. Since 1956, the annual landings rose but have never reached the level of landings reported in either 1954 or 1955.

This document presents the catch and effort statistics for iceland scallop and giant scallop fisheries along the western coast of Newfoundland from 1984 to 1990. The statistical data collected from 1984 has been selected because of their overall quality. Prior to 1984, catch and effort data were compiled and recorded has monthly landings, without information on the fishing effort (number of fishing vessels involved). The socio-economic particularities of the fisheries are also discussed.

Materials and Methods

The landings statistics data from 1984 to 1990 were provided by the Program Coordination and Economics Branch (PCE Branch) of the Department of Fisheries and Oceans. The 1991 fisheries statistics were not presented as they were not completely compiled by the PCE Branch. The present system for

reporting the catch and effort data does not differentiate between iceland and giant scallops. However, since the iceland scallop are found mainly in the deep and cold waters of the Strait of Belle Isle, landings reported in statistical districts 1, 47, 48, 49 and 50 were assumed to be iceland scallops (Figure 1). Scallop landings reported in statistical districts 38, 39, 40, 41, 42, 43, 44, 45 and 46 were assumed to be giant scallops.

Since 1984, two types of transactions (often called sale slips) between a fisherman and a fish product buyer were reported in the catch and effort statistics; regular transactions and supplementary B transactions. A regular transaction is produced between a fisherman and a registered fish product buyer. Supplementary B transactions are estimated quantities and values of scallop sold to a non-registered fish product buyer (ie: local sales). These estimates are reported on special forms by Fisheries and Oceans representatives (ie: fishery officers) working in the different fishing communities.

The fishing effort was expressed in terms of the number of active fishing vessels and the annual catch per vessel by sorting the catch and effort data by Canadian Fishing Vessel (CFV) number and by dividing the total catch for each year by the number of active fishing vessels for that year. Any fishing vessel that recorded at least one (1) transaction was considered as one active fishing vessel. Potential fishing effort (number of fishing vessels) for 1990 was estimated from the number of fishing licences issued.

Results and Discussion

Iceland Scallop

The iceland scallop landings on the western coast of Newfoundland have decreased substantially from 277 t in 1985 to 9 t in 1990 (Figure 2, Appendix I). This decrease coincides with the decrease in the number of active fishing vessels and catch per vessel. The data demonstrate that in 1986, with 88 active fishing vessels, an average ratio of 2.4t of scallop meat per vessel was recorded compared with 1990 where only 11 active vessels landed 0.9t per vessel (Figure 2, Table 1). In 1990, the number of active fishing vessels represented 8% of the 134 licence holders (94 regular licences and 40 exploratory permits) that landed iceland scallop in the Strait of Belle Isle region.

The decrease in landings and effort cannot be explained with the available data. A resource depletion can be suggested but the hypothesis cannot be verified without proper biomass assessment.

Giant Scallop

The giant scallop landings on the western coast of Newfoundland (south of the Strait of Belle Isle) have also decreased from 41 t in 1984 to 4 t in 1990 (Figure 3, Appendix II). Similarly to the iceland scallop, the decrease in landings coincides with the overall decrease in number of active fishing vessels form 1986 to 1990 (Figure 3). However, the catch/vessel increased from 0.5 t to 0.7 t/vessel (Table 1). From the 90 potential scallop licence holders in this section of the Newfoundland coast, only 6% fished in 1990.

The overall trend of the proportions of supplementary B landings are relatively stable from 1984 to 1990 (Figure 3, Appendix II). It should be noted that regular transactions and active fishing vessels were not reported in 1989.

As with the iceland scallop, no data are available to explain the reduction of landings and fishing effort.

Conclusion

The iceland and giant scallop fisheries on the western coast of Newfoundland are characterized by an overall decrease of catch and effort from 1984. Even though the iceland and giant scallop fisheries are two distinct fisheries, catch and effort data show similar trends. The decrease could not be explained clearly in terms of socio-economic or biological factors with the available data. Most fishermen are holding one of more fishing licences to fish other species therefore, it could be assumed that part of the decrease is the result of a change in the targeted species. With the overall decrease in price offered to fishermen from approximately $12/kg for scallop meat in 1984 to $8/kg in 1990, fishermen may have directed their fishing effort toward more lucrative species (ie: ground fish). However, fishermen in both fisheries have mentioned their concerns about a depleted resource resulting in uneconomic fishing incomes.

Research surveys conducted on iceland scallop beds in the Strait of Belle Isle in 1985, 1986 and 1987 (Lanteigne and Davidson, 1987, 1988; Lanteigne *et al.*, 1986) using a commercial fishing dredge as sampling gear, have shown low catch proportions of pre-recruits ranging from 4.1% to 5.1%. The size distribution of the scallops sampled in all surveys has also shown one mode, with a narrow size range . Considering the slow growth rate of the iceland scallop, the survey results suggest a somewhat weak

recruitment potential and a population susceptible to overfishing. As explained by Lanteigne and Davidson (1987, 1988), three major changes of the fishing gear design occurred since the late 1960's. This improvement of the fishing gear efficiency and the discovery of new fishing grounds may have helped to maintain the catches (catch/vessel) at an economically reasonable level during the 1970's and 1980's. Taking into account the fact that most of the fishing beds are now exploited, as well as the increasing fishing efficiency, it may be possible that fishing effort has reached a level which cannot be sustained by the resource. More surveys and a tight monitoring of the fishery will be needed to verify this hypothesis.

With the data presently available, it is impossible to assess the iceland and giant scallop fisheries and to determine sensible explanations and solutions with the data available. However, an overview of the situation could be obtained by conducting a survey with the fishermen using questionnaires. A questionnaire program would provide the basic information required to evaluate the need of management measures or further research on these scallop populations.

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Table 1. Number of active fishing vessels and annual catch (t of scallop meat) per vessel from 1986 to 1990 for the iceland and the giant scallop fisheries, on the western coast of Newfoundland.

Years	Iceland scallop fishery		Giant scallop fishery	
	Number of active fishing vessels	Catch/vessel (t of scallop meat)	Number of active fishing vessels	Catch/vessel (t of scallop meat)
1986	88	2.4	35	0.5
1987	57	2.2	37	0.4
1988	30	1.6	22	0.6
1989	14	1.2	0	--
1990	11	0.9	5	0.7
1991	Data not available		Data not available	

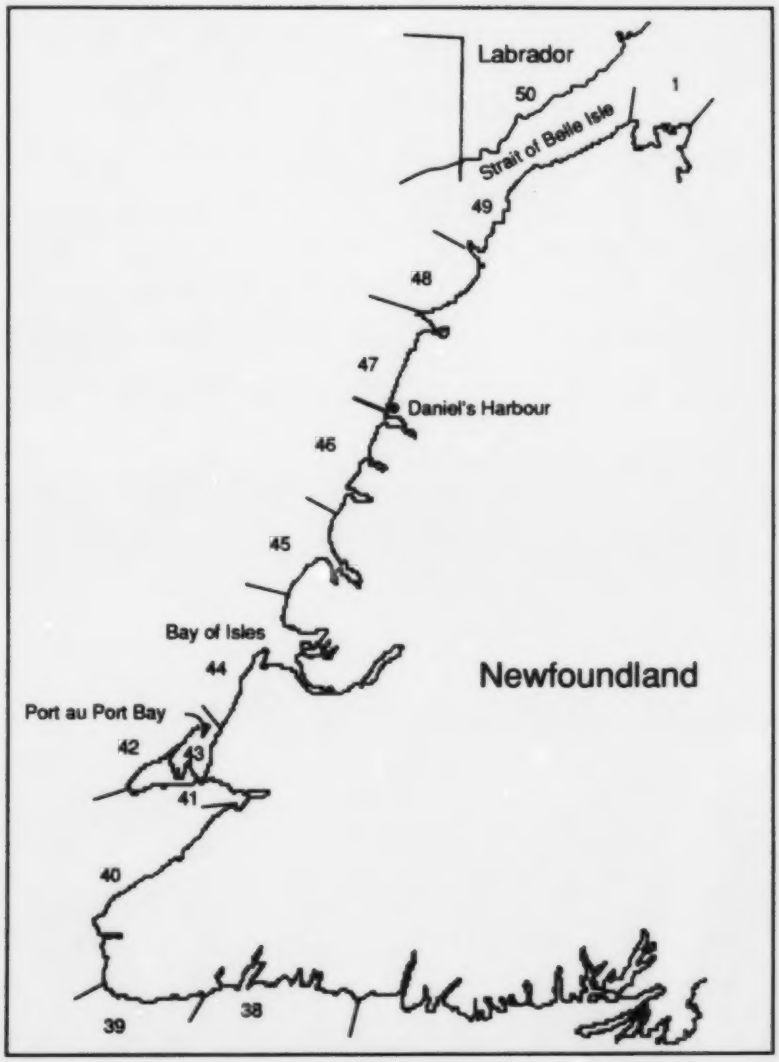

Figure 1. Statistical districts on the western coast of Newfoundland, Fisheries and Oceans, Gulf Region.

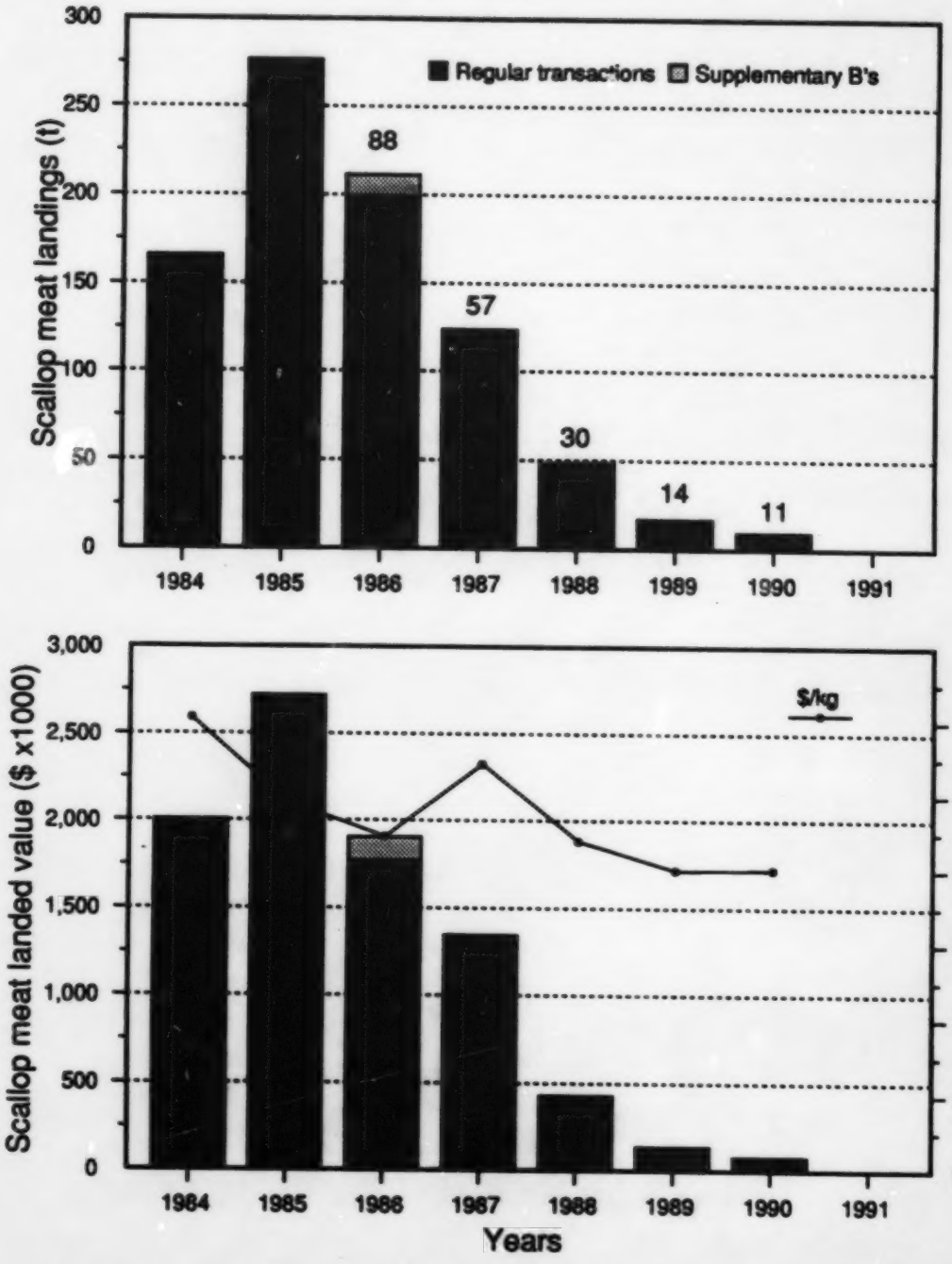

Figure 2. Iceland scallop landings, landed values and price/kg in statistical districts 1, 47, 48, 49 and 50 on the western coast of Newfoundland. The 1991 catch and effort data were not available. The number of active fishing vessels is shown above each bar of the histogram from 1986 to 1990.

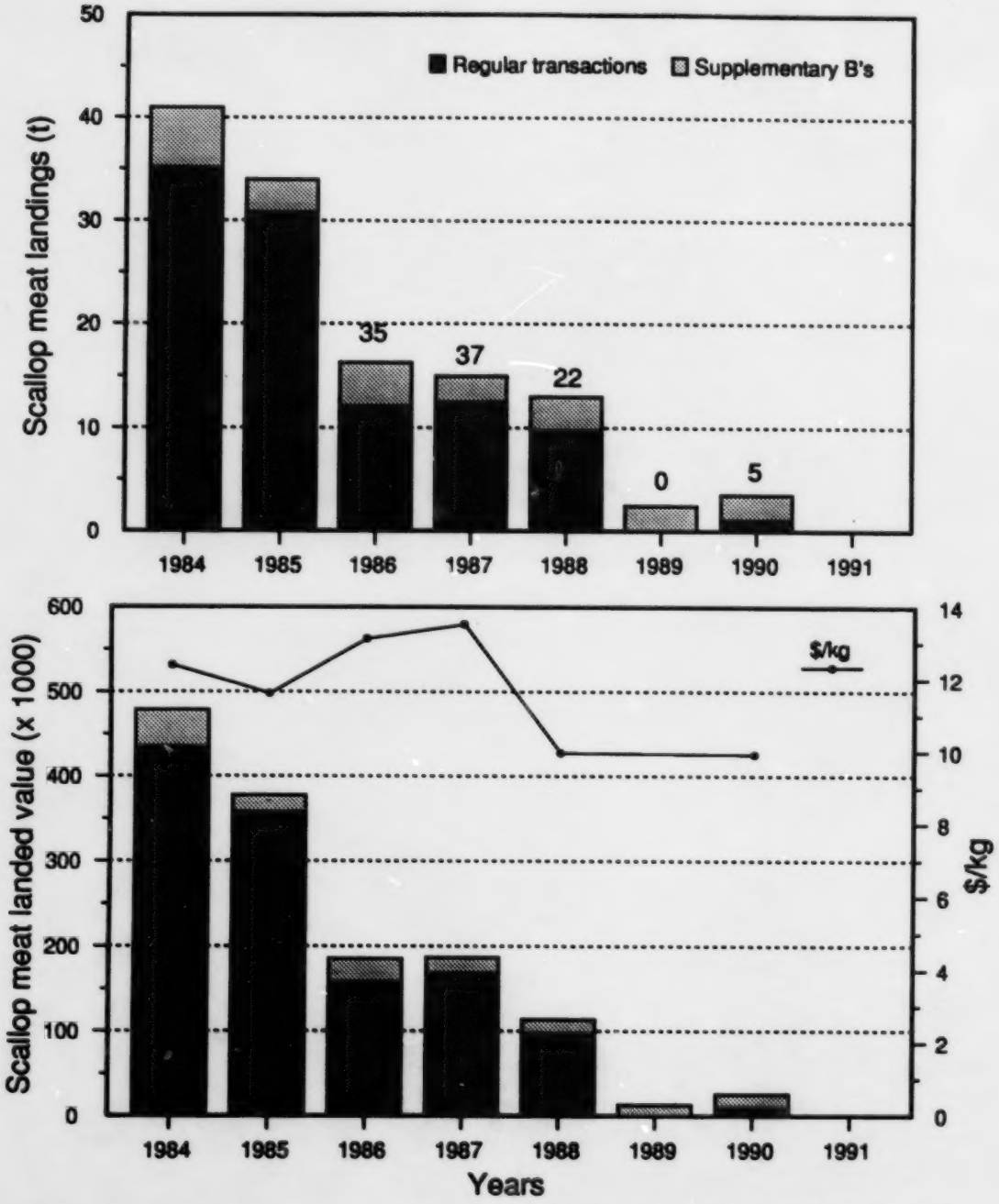

Figure 3. Giant scallop landings, landed values and price/kg in statistical districts 38, 39, 40, 41, 42, 43, 44, 45 and 46 on the western coast of Newfoundland. The 1991 catch and effort data were not available. The number of active fishing vessels is shown above each bar of the histogram from 1986 to 1990.

Appendix I. Iceland scallop landings, landed values and price/kg in statistical districts 1, 47, 48, 49 and 50 on the western coast of Newfoundland. The 1991 catch and effort data were not available. The landings and proportions of the supplementary B landings are presented.

Years	Regular transactions			Supplementary B's		
	scallop meat (t)	landed value ($ x1000)	$/kg	scallop meat (t)	percentage of total landing	landed value ($ x1000)
1984	165.5	2,003.6	12.10	0		0
1985	275.6	2,706.7	9.82	1.1	0.4%	12.9
1986	199.5	1,774.9	8.90	11.6	0.5%	128.2
1987	121.5	1,318.5	10.85	2.5	0.2%	22.6
1988	48.0	421.7	8.78	0.6	0.1%	5.9
1989	16.3	130.9	8.01	0.6	0.3%	4.2
1990	9.0	72.0	8.03	0.5	0.5%	3.5
1991	Data not available			Data not available		

Appendix II. Giant scallop landings, landed values and price/kg in statistical districts 38, 39, 40, 41, 42, 43, 44, 45 and 46 on the western coast of Newfoundland. The 1991 catch and effort data were not available. The landings and proportions of the supplementary B landings are presented.

Years	Regular transactions			Supplementary B's		
	scallop meat (t)	landed value ($ x1000)	$/kg	scallop meat (t)	percentage of total landing	landed value ($ x1000)
1984	35.1	435.3	12.39	5.8	14%	43.1
1985	30.8	357.9	11.62	3.2	9%	19.6
1986	12.1	158.5	13.12	4.2	26%	26.7
1987	12.5	168.7	13.51	2.5	17%	18.0
1988	9.8	97.2	9.96	3.2	25%	16.6
1989	0	0		2.4	100%	12.8
1990	1.1	10.7	9.92	2.5	69%	15.0
1991	Data not available			Data not available		